

AMENDMENTS TO THE CLAIMS

1-96. (Canceled)

97. (Currently amended) A method for decreasing neuronal cell death associated with a neuropathy, comprising administering to a subject afflicted with ~~or at risk of being afflicted with a neuropathy associated with altered N-CAM or L1 isoform levels~~ a morphogen comprising a dimeric protein, the dimeric protein having one or more of the following:

- (1) a conserved C-terminal six-cysteine skeleton 60% identical to residues 43-139 of SEQ ID NO: 5;
- (2) a conserved C-terminal seven-cysteine skeleton 70% homologous to residues 38-139 of SEQ ID NO: 5;
- (3) a conserved C-terminal six-cysteine skeleton 70% homologous to residues 43-139 of SEQ ID NO: 5; or
- (4) an amino acid sequence of human OP-1, mouse OP-1, human OP-2, mouse OP-2, 60A, GDF-1, BMP2A, BMP2B, DPP, Vg1, Vgr-1, BMP3, BMP5, or BMP6;

wherein the morphogen (i) stimulates the production of an N-CAM or L1 isoform in said neuronal cell, and (ii) decreases neuronal cell death associated with a neuropathy.

98. (Canceled)

99. (Currently amended) A method for decreasing neuronal cell death associated with a chemical or physical injury, comprising:

- (a) administering to a subject ~~having a neuron~~ afflicted with ~~or at risk of being afflicted with a chemical or physical injury or who was exposed to a toxin that inhibits the proliferation and migration of neurons and interferes with cell adhesion, which exposure causes chemical injury~~; or
- (b) prophylactically administering to a subject just prior to, or concomitant with, surgery ~~that causes physical injury to a neuron~~,

a morphogen comprising a dimeric protein with:

- (1) a conserved C-terminal six-cysteine skeleton 60% identical to residues 43-139 of SEQ ID NO: 5;
- (2) a conserved C-terminal seven-cysteine skeleton 70% homologous to residues 38-139 of SEQ ID NO: 5;
- (3) a conserved C-terminal six-cysteine skeleton 70% homologous to residues 43-139 of SEQ ID NO: 5; or
- (4) an amino acid sequence of human OP-1, mouse OP-1, human OP-2, mouse OP-2, 60A, GDF-1, BMP2A, BMP2B, DPP, Vg1, Vgr-1, BMP3, BMP5, or BMP6;
wherein the morphogen (i) stimulates the production of an N-CAM or L1 isoform in said neuronal cell, and (ii) decreases neuronal cell death associated with a the chemical or physical injury.

100-104. (Canceled)

- 105. (Previously amended) The method of any of claims 97, 99, 112 and 113, wherein the morphogen is human OP-1.
- 106. (Previously amended) The method of any of claims 97, 99, 112 and 113, wherein the morphogen is mouse OP-1.
- 107. (Previously amended) The method of any of claims 97, 99, 112 and 113, wherein the morphogen is human OP-1, mouse OP-1, human OP-2, mouse OP-2, 60A, BMP2A, BMP2B, Vg1, Vgr-1, BMP5, or BMP6.
- 108. (Previously amended) The method of any of claims 97, 99, 112 and 113, wherein the morphogen is human OP-1, mouse OP-1, human OP-2, mouse OP-2, BMP5, or BMP6.
- 109. (Previously amended) The method of any of claims 97, 99, 112 and 113, wherein the morphogen is a dimeric protein having a conserved C-terminal six-cysteine skeleton 60% identical to residues 43-139 of SEQ ID NO: 5.

110. (Previously amended) The method of any of claims 97, 99, 112 and 113, wherein the morphogen is a dimeric protein having a conserved C-terminal seven-cysteine skeleton 70% homologous to residues 38-139 of SEQ ID NO: 5.
111. (Previously amended) The method of any of claims 97, 99, 112 and 113, wherein the morphogen is a dimeric protein having a conserved C-terminal six-cysteine skeleton 70% homologous to residues 43-139 of SEQ ID NO: 5.
112. (Currently amended) A method for decreasing neuronal cell death associated with a neuropathy, comprising contacting a neuronal cell damaged by ~~or at risk of being damaged by a neuropathy associated with altered N-CAM or L1 isoform levels~~ with a morphogen comprising a dimeric protein, the dimeric protein having one or more of the following:
 - (1) a conserved C-terminal six-cysteine skeleton 60% identical to residues 43-139 of SEQ ID NO: 5;
 - (2) a conserved C-terminal seven-cysteine skeleton 70% homologous to residues 38-139 of SEQ ID NO: 5;
 - (3) a conserved C-terminal six-cysteine skeleton 70% homologous to residues 43-139 of SEQ ID NO: 5; or
 - (4) an amino acid sequence of human OP-1, mouse OP-1, human OP-2, mouse OP-2, 60A, GDF-1, BMP2A, BMP2B, DPP, Vg1, Vgr-1, BMP3, BMP5, or BMP6; and wherein the morphogen (i) stimulates the production of an N-CAM or L1 isoform in said neuronal cell, and (ii) decreases neuronal cell death associated with a neuropathy.
113. (Currently amended) A method for decreasing neuronal cell death associated with a chemical or physical injury, comprising:
 - (a) ~~contacting a neuronal cell damaged by or at risk of being damaged by a chemical or physical injury or exposure to a toxin that inhibits the proliferation and migration of neurons and interferes with cell adhesion, which exposure causes chemical injury; or~~

(b) prophylactically contacting a neuronal cell just prior to, or concomitant with, surgery that causes physical injury to the neuron;

with a morphogen comprising a dimeric protein with:

- (1) a conserved C-terminal six-cysteine skeleton 60% identical to residues 43-139 of SEQ ID NO: 5;
- (2) a conserved C-terminal seven-cysteine skeleton 70% homologous to residues 38-139 of SEQ ID NO: 5;
- (3) a conserved C-terminal six-cysteine skeleton 70% homologous to residues 43-139 of SEQ ID NO: 5; or
- (4) an amino acid sequence of human OP-1, mouse OP-1, human OP-2, mouse OP-2, 60A, GDF-1, BMP2A, BMP2B, DPP, Vg1, Vgr-1, BMP3, BMP5, or BMP6; and

wherein the morphogen (i) stimulates the production of an N-CAM or L1 isoform in said neuronal cell, and (ii) decreases neuronal cell death associated with a the chemical or physical injury.